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## **“You Can Dance Your Prototype If You Like”: Independent Filmmakers Adapting the Hackathon**

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# **“You Can Dance Your Prototype If You Like”: Independent Filmmakers Adapting the Hackathon**

Hackathon-style events are increasingly used to facilitate cross-disciplinary learning and innovation in the media industries. Based on an observational study of a hackathon organised as part of the film festival Nordic Panorama (NP) we analyze the challenges in using the hackathon format to facilitate cross-disciplinary learning and innovation for filmmakers, developers and designers. We find that many participants experienced frustrations resulting from a lack of programming skills and their expectation that the hackathon should result in “something digital”. Additionally, ideals for authorship embedded in the working cultures of film and TV professionals impeded the team’s ability to involve all participants on an equal footing. As implications for future hackathons we suggest organisers should consider using tools for end-user development and generative toolkits to facilitate digital making and collaborative learning. We also suggest similar events should avoid including project owners if the group work is based on existing projects.

**Keywords:** design; film; hackathon; hacker culture; media work

## **Introduction**

For independent filmmakers the ongoing development of mobile and networked media has opened up new opportunities and new challenges. Many need to get familiar with methods, tools and techniques usually associated with software development and design. Research into “media work” (Deuze 2007; Hesmondhalgh 2013) has demonstrated the precarious nature of such “portfolio careers” and the pressure on media workers to acquire new skills in designing and making personalized, participatory and user-generated media (Deuze 2016). In recent years hackathons have become an increasingly popular way to facilitate practical engagement with new tools and techniques, expanding beyond the field of software development to other areas such as civic engagement and culture (Briscoe and Mulligan 2014; Irani 2015; Leckart 2012; Lodato and DiSalvo 2016).

In this article, we report on a hackathon that took place as part of the film festival Nordic Panorama (NP) in Malmö 19-22 Sept. 2014. The purpose of the event was to facilitate multidisciplinary

collaboration, innovation and learning (“Hackathon | Nordisk Panorama” 2015). The event was part of an ongoing series of hackathons taking place as part of the unconference track of the festival since 2012 in order to bring together “old disciplines” like film and television with new media and games. Around half the participants were filmmakers, while the rest came from backgrounds in art, design, game design and software development. We see the NP hackathon in the light of a broader trend of cross-disciplinary hackathons for the media, arts and culture fields (Briscoe and Mulligan 2014) such as the POV Hackathons (“POV Hackathon | POV | PBS” 2015; Filippova et al. 2017), Tribeca Hacks (“Tribeca Hacks” 2015), Popathons (“Popathon · Growing a Community of Web-Native Storytellers” 2015) and Culture Hack (“What Is Culture Hack? | Culture Hack” 2016).

Based on this case we explore the following research question: What are the main challenges in using the hackathon format to facilitate cross-disciplinary learning and innovation for filmmakers, developers and designers? We suggest that these challenges can be understood in light of the different work cultures associated with the variety of professions represented in the Nordic Panorama hackathon. The concern that professionals belonging to different domains such as science, engineering and the humanities represent different cultures with limited understanding for each other has long been a matter of scholarly debate (Snow 1959; Brockman 1995). More recently, Lewis and Usher have demonstrated the challenges in collaborations between technologists and journalists through their study of the Hacks/Hackers organisation, pointing out that journalists and hackers have “distinctive occupational norms and values” (2014, 3) and struggle with developing “a common language” (2014, 8). This article contributes to research into cross-disciplinary collaboration between filmmakers, developers and designers by exploring the challenges implied in bridging these distinct work cultures through the condensed format of a hackathon.

### *Hackathons and hacker culture*

The popular image of hackathons is one of rapid, intense bursts of productivity, as captured in Wired's description of the phenomenon: "Relentless programming sessions fuelled by hope and coffee. Usually days long, hackathons bring together Silicon Valley's brightest and most sleep-deprived as they attempt to grind out software (and companies based on it)" (Lufkin 2012). The term hackathon is a combination of the word hack and marathon and was first used about events in the software development industry (Lodato and DiSalvo 2016). Hackathons are intensive events where participants gather to explore and experiment with a technology and/or a common theme, developing prototypes in a short timeframe, usually 24-48 hours, working in teams that are either pre-formed or formed ad hoc at the start of the event. Many hackathons include a secret task or theme that is revealed at the start of the event. At the end of the event the groups present their prototypes, and prizes are often awarded by an external jury. Teams are typically free to organize themselves and their work processes as they see fit from the start to the end of the event, both when it comes to working on their project and more mundane necessities like eating and sleeping. Hackathons require thorough preparation and a particular frame of mind, geared towards aligning the complexities of software development with rapid prototyping in a way that leads to a convincing prototype (Kaitila 2012). The short timeframe favours tinkering or bricolage, often relying on ready-mades, templates, frameworks and earlier projects.

Trainer et al. (2016) describe hackathons as brief and radical collocation of work involving a trade-off between advancing technical work and forging social ties. Based on a study of hacker conferences, Coleman suggests that the apparently paradoxical need for hackers to get together physically (in spite of the apparent "virtual" nature of their activities) may be understood as a desire for ritual celebrations of the hackers' lifeworld and culture (G. Coleman 2010). Hacker culture, according to Coleman, is characterised by "an expansive pragmatic practice of instrumental yet playful experimentation and production" (2012, 99) as well as an ideal for productive freedom that contains

tensions between independence and interdependence, “between two productive extremes—the collaborative and individual” (2012, 109). Research on game jams has emphasized social aspects of learning, in particular for handling collaboration, as well as technical skills related to new tools (Arya et al. 2013; Fowler et al. 2013).

Some studies have focused on issue-oriented and open government hackathons, discussing the relation between the entrepreneurial values inherent in the hackathon format and the possibility to use this format to explore societal issues (Johnson and Robinson 2014; Lamela et al. 2013). In an ethnographic study of an open government hackathon in India, Irani describes the hackathon as a “celebration of scientific and engineering ethos” favouring optimistic doing and making before debate; while “hackathons ostensibly produce ‘demos’ (software prototypes), [they] more powerfully produce entrepreneurial subjects” (Irani 2015, 800). Irani suggests that the hackathon was characterized by an “idealization of speed and vision” that conflicted with the actual ability of participants to create concrete results (2015, 816–17). Lodato and DiSalvo discuss issue-oriented hackathons which “are organized around themes considered or cast as having a ‘social’ quality” (2016, 540) and argue that such events should be judged as sites for material participation rather than production, foregrounding “how the event fosters opportunities for collaborative or collective issue articulation” (2016, 553). They argue that the hackathon format requires issues to be operationalized and presented as problems which can be solved technologically, rather than controversies for debate and contestation. This limits the possibility for issue articulation and formation of publics, leading instead to a focus on speculative material participation through props and “proto-publics” (2016, 554).

Goddard et al. (2014) have given a set of guidelines to follow when organizing a game jam, including a recommendation to use design constraints to “facilitate designed outcomes”. This suggestion aligns with research on teamwork, which indicates that it is possible for groups to proceed quickly to problem-solving activities, avoiding personal and interpersonal impediments, but that this requires tasks

of an impersonal and concrete nature, with clear rules “to orient the group members” (Tuckman 1965). However, for an event such as the NP Hackathon a focus on impersonal, concrete and rule based problem-solving would be at odds with the organisers’ stated interest in facilitating an open process geared towards unexpected outcomes and innovation across disciplines. As research on transdisciplinary teams show, the need to “integrate knowledge and methods across subject areas to produce a synergistic result” requires openness to ideas and that the team members hold each other accountable (Collins and Fillery-Travis 2015).

### ***Filmmaking***

While film production is one of the archetypical examples of collaborative and industrial art, such production is also notorious for its hierarchical work structures, especially in large scale production environments like Hollywood, with clear demarcations of above and below the line film work (Caldwell 2008). This is also true, albeit on a less industrial scale, for the numerous small independent film producers in the Nordic countries (Köhncke 2006; Stenderup 1994; Berntsen 2008). In particular the auteur tradition is strong in the Nordic countries, leading to film projects being centered around one creative leader, the director. Film production also distinguishes itself from modern software development in that it usually follows a strictly linear work flow, devoting much time and effort on the initial phases of a project, placing great emphasis on developing a profound idea worth pursuing before starting to materializing it – after which the process often follows a strict production schedule proceeding through clearly defined phases such as development, pre-production, production, post production and distribution.

Given these aspects of filmmaking one might expect that the hackathon format would not be particularly suitable for film work. However, competitions such as *Reality Ends Here* (Watson 2012) and *The 48 Hour Film Project* (48 Hour Film Project, Inc. 2017), which challenge participants to create

short films in 48 hours, enjoy great popularity. The latter was originally inspired by a similar project in theatre (The 24 Hour Plays n.d.), and could more broadly be seen as an instance of the long tradition of using constraints and games to facilitate creativity in arts (Elster 2000; Mathews 1997; Mercier 2014; Boal 2002).

## ***Design***

While hackathons have roots in hacker culture, the phenomenon can also be framed as a collaborative, rapid prototyping event that have much in common with practices that have been developed in design, from the tradition of design charrettes (Roggema 2014) to contemporary practices in human-computer interaction (HCI) and interaction design (IxD). Work practices in HCI and IxD differ from software development in that developers are responsible for making the finished product, while the designers only make the specification for it (Wroblewski 1991). However, prototypes can be seen as bridging this gap, when understanding certain practices of prototyping as blurring the boundaries between specification and product, design and use (Ehn 2008; Fischer et al. 2004).

With the computer increasingly becoming part of all aspects of everyday life, prototyping cultures are being identified that emphasize the importance of programming and craftwork (Vallgård 2013; Bergström and Blackwell 2016). Craftwork perspectives have also been applied to understand hacking (E. G. Coleman 2012) and programming (McCullough 1998), as well as independent film making (Buckland 2016). Central to theories of craftwork is working with materials, of deliberately using eyes, hands and tools to overcome material resistance to make a thing imagined (Sennett 2009). Tim Ingold discusses craft using the concept “making”, which he describes as a process of inquiry, an activity which requires the designer to deal with materials to create “correspondences” in a tension between “imaginative foresight” and “material engagement” (Ingold 2013, 72).

Considering prototyping as techniques for rapidly materialising ideas into artefacts, one may view hackathons as ad-hoc design events (Lodato and DiSalvo 2015) well suited for such practices. However, many designers within the fields of HCI and IxD emphasize design as a thoughtful practice (Löwgren and Stolterman 2004) using prototyping as tools for uncovering user requirements and exploring a design space, rather than rapidly producing functional artefacts. One could argue that the format of a hackathon is at odds with utilitarian design practices focused on understanding user needs and formulating requirements and specifications.

## **Method**

The Nordic Panorama hackathon had 26 participants, 16 male and 10 female, in 7 groups (Table 2). Many of them were selected by application and many were invited by the organizers. The first author of this article was invited by the organizers to observe the event and share insights with the organizers and participants. The cost of attending was covered by the hosting festival, both for the participants and the first author. The second author also participated in the observations, but had no costs covered by the organizers.

Our primary method when studying the hackathon was direct observation. Robson (2002) classifies observational methods along two dimensions: the degree of pre-structure and the role adopted by the observer. Regarding pre-structure, we approached this event with an open and exploratory perspective and had not formulated specific hypotheses or theoretical frameworks beforehand. Our roles were closer to being passive observers than participant observers, however we occasionally asked clarifying questions and joined in conversations in order to better understand what was going on in the groups. Before collecting data from the event, we presented our research aims and our methods to the participants, and asked each participant to sign a letter of consent. To be able to get an understanding of



the background and skills in the groups we also handed out a simple survey that the participants answered when they had some time to spare.

Robson (2002, 324–25) classify potential observational biases into; selective attention, selective encoding, selective memory and interpersonal factors. As already noted we chose an open approach to the event, but there were so much going on in the event, that some selection needed to take place. Fortunately, we were two researchers (the authors), and could cover more ground between us. We were able to visit all seven groups several times during the weekend, and we could spend significant time observing each group. For the most part we simply sat down next to a group, placed the audio recorder on the table and observed their discussions, but sometimes we also asked questions (see Figure 1). Our observations were documented through audio recordings, notes, photos and video and we recorded 20 hours and 55 minutes of audio during the event, as well as 1,5 hours of video during the concept presentations.



Figure 1: Observing one of the groups.

The analysis of the gathered material was a three-step process following abductive reasoning. First, the two authors separately used our documentation to write down a narrative vignette of each group's work in the hackathon, as observed by us. Second, we compared our vignettes, discussing similarities and differences and filling out holes and nuances in our observations. And third, these vignettes were used to draw out general themes. Regarding the validity of our findings, we made sure that they were a sound interpretation of what went on in the hackathon by doing the analysis and reviewing the narrative accounts of each of the group processes together.

## *Overview of the event*

The NP hackathon conformed to many of the standard conventions for hackathons. It took place over a little more than 48 hours, from Saturday morning until Monday at noon, and was located apart from the main festival venue in a makerspace with a few large rooms and a workshop with various physical materials available for prototyping (Figure 2). However, there were two main deviations from the typical format. First of all, the starting point for the contest was not a secret theme, but two existing film and television concepts which the participants had been informed about in advance: an animated short film and a collaborative documentary project. Second, the teams were not formed by the participants themselves, but by the organizers ahead of the event.



Figure 2: The hackathon took place in a well-stocked maker space.

The NPFF hackathon included a number of joint sessions with presentations for all the participants, interspersed by longer stretches of working in teams. Table 1 shows the main structure of the event. At the pre-event meet-up on Friday the plans for the event were presented, followed by presentations of each of the two concepts that were going to be used as basis for the hackathon. These concepts differed regarding genre, format and degree of completeness.

The animated short film project consisted of a far developed concept for an animated fiction film with much material already made: visual artwork, motion-capture data, 3D models, audio and so forth. The director showed a trailer for the film and presented the main characters, main conflict and the setting for the film (Figure 3). He explained that the team behind the film was looking for funding to produce the main movie, but were also looking for ideas about how to develop the concept further, and their main motivation for participation in the hackathon appeared to be looking for fresh ideas.



Figure 3: The project owner presenting the animated short film project.

The collaborative documentary project consisted of a concept for a reality TV show, in which a selected group of citizens control an actor as a human "avatar" conducting playful interventions in public places in order to challenge people's beliefs and prejudices. In their presentation, the directors focused on the overall ideas underlying their concept, regarding topics like democracy, participation and prejudices. They also showed a trailer for a pilot version of the project. The concept had originally been developed for a public broadcaster to use in their election coverage. However, the broadcaster had turned it down, and the two directors were now looking for fresh ideas about new directions for the concept. They did not have any materials to share with the participants other than the trailer.



Figure 4: The project owners presenting the collaborative documentary project.

Table 1: Timetable for the event with locations.

When	What	Where
Friday evening	Pre-event meet up, and festival opening party	Festival venue
Saturday morning	Breakfast and kick-off presentations of concepts	Makerspace
Saturday, lunch	Lunch and temporary presentations by the groups	Makerspace
Saturday evening	Dinner and drinks	Makerspace
Sunday afternoon	"Dress rehearsal" presentations by the groups	Makerspace
Monday at noon	Final presentations by the groups	Festival venue

When asked about what they hoped to get out of the hackathon, the directors of both concepts avoided giving clear directions, and chose instead to emphasize that they were open to any and all ideas that might come up. The main organizer, Eva, also gave the participants instructions that were similarly open: “For me the most exciting thing is the variation of what can come out of this process. So it doesn’t have to be like a set format, you can dance your prototype if you want to.”

During the hackathon the participants spent most of the time in the makerspace working in groups or separately, only interrupted by meals and a few plenary sessions. On Saturday after lunch the groups joined for what the organizer called “a peek into the process”, where the groups were given one

minute to explain what they were working on and whether they needed any help or resources. On Sunday at 8pm the groups presented their projects as a dress rehearsal. The final presentations took place on Monday at noon, in a public session at one of the festival venues open to the general festival audience.

Table 2: Groups, participants and background. The names used in this article are not the real names of the participants.

Team	Participants	Project
1	Aki, filmmaker and visual artist (project owner) Betsy, composer and game tester Carl, film producer David, programmer	Short film
2	Emily, web producer Fatima, documentary filmmaker George, programmer / IT-student	
3	Hanna, architect/programmer Ivan, computer engineer and self-taught filmmaker Jill, photojournalist and designer Kasper, filmmaker	
4	Lars, visual artist and reality TV producer (project owner) Maria, game designer and copywriter Noah, computer programmer	Documentary
5	Olivia, visual artist (project owner) Pat, architect / filmmaker Rolf, game designer Sven, documentary filmmaker with a technical background	
6	Thor, programmer and IT student Victor, television-producer and commissioning editor William, film writer Ylva, artist	
7	Anna, game designer and artist Ben, filmmaker Camilla, university media producer Dan, visual artist and designer	
Others	Eva, main organizer Fred, engineer	

## **Findings**

In the following, we will present our observations from the hackathon, focusing first on the types of productions that were made by participants in the hackathon, and thereafter on the ways in which participants organised their collaboration.

### ***Hacking***

All the groups except for group 7 had one participant with programming competence (the game designer in group 5 could also do programming). However, we observed little of the kind of work activity that is common in technology-oriented hackathons or game jams, where participants tend to spend much time in front of each their computer, intensely working on technical prototypes. In the NP hackathon, most of the groups spent most of their time discussing their ideas for concepts, and typically only for limited periods of time did they work on technical instantiation of their ideas, and then usually only the single participant with programming competence worked alone on the technical solution.

We consider that groups 1, 3 and 4 had a working pattern that most resemble that of a typical hackathon. All three groups included participants who had participated in hackathons before. These groups decided at the beginning of the hackathon to quickly agree on a concrete idea to implement, and then got to work on prototyping an idea which might seem conceptually half-baked, but practically realisable. These three groups were also the only groups that finished the hackathon with a software prototype (see Table 3, below).





Figure 5: Participants in group 1 working on their prototype.

Groups 2, 5, 6 and 7 spent a lot of time discussing, repeatedly restarting their processes, reworking conceptual aspects of the projects they were working on. Group 6 settled on an idea for a website that would facilitate collaborative creativity, and developed a proposal for a concept and an information architecture that they presented in a slideshow presentation and a short video. Group 5 developed an idea for a live game that would be played using a video connection to a player acting as “avatar”, which they demonstrated using a Skype connection to a player carrying a smartphone. The final two groups, 2 and 7, made board games.



Figure 6: Participants in group 7 discussing their project.



Table 3: The main and secondary making activities for the groups.

Group	Final prototype	Presentation materials
1	A working prototype of a 3D adventure game in Unity	The prototype and a slideshow presentation
2	A physical prototype of a board game	The prototype and a slideshow presentation
3	A Unity simulation of an interactive room installation	A video of the simulation
4	A working prototype of an “avatar” system for a live event	Online text-based interface
5	Concept for a live “avatar” game	Software “card-picker” (random generator), slideshow presentation, Skype
6	Concept for a social media platform for creative activism	Video, paper sketches, slideshow presentation
7	Concept for a board game	Tumblr.com page with printable game materials and documentation

### *Filmmaking*

While nearly half of the participants (12 of 26) self-identified as film or TV professionals, only two of the groups (3 and 6) made videos for the final presentation. For group 3 the video was used to present a simulation made in Unity (they did not explain why they showed a video rather than demonstrating the simulation live), whereas for group 6 the video was an enquete-style collection of responses posed to other hackathon participants illustrating opinions that might be represented in the group’s proposed social media platform. In other words, in neither of these cases was the video intended to be the main product. And in both cases the production of the actual video did not seem to have filled a great portion of the group’s time, and appears to have been put together rather rapidly towards the end of the process, as a way to materialize an idea that they did not have the capacity to realize in another way.

### *Design work*

As can be seen from Table 3 **Error! Reference source not found.** above, quite few of the participants (5 of 26) identified as designers. It is perhaps not surprising, then, that we observed little of the kinds of activities we would expect from designers, such as structured ideation processes, sketching and lo-fi prototyping, user research and/or user involvement. Group 3, which included both a designer and an architect, were the ones that most clearly adopted some designerly techniques: They started their process with an ideation session in which they wrote ideas on sticky notes and sorted them together on a board, after which they quite quickly converged on an idea that they felt they realistically could implement with the resources and competences represented in the group. After this the group divided tasks among themselves, with one person tasked with programming a virtual version in Unity, while another used the materials in the makerspace to produce a small physical prototype of their idea. Interestingly, while the makerspace had a large selection of different materials and tools available for physical prototyping only one other group, group 2, used this resource – in their case in order to produce a board game. Several other groups used sticky notes and paper materials for sketching their ideas at various points, but we did not see any clear attempts at creating more structured visualisations like storyboards, wireframes or paper prototypes. We also did not register much attention directed at identifying specific users, target groups, personas, etc.



Figure 7: Members of group 2 presenting their prototype for a board game, made with materials from the maker space.



Figure 8: One of the members of group 3 working on a physical prototype.

One of the groups – group 4 – did conduct a test which involved people outside of the hackathon. Their idea was heavily influenced by the reality TV concept, and consisted of a game in which one user agrees to act as an “avatar” carrying out instructions from remote users via a smartphone videolink, which would transmit back to the remote users the avatar’s interactions with random passers-by. This group arranged a test in which one of the group members went out on the streets outside the makerspace and acted as avatar while other hackathon participants took turns giving instructions and watching the interactions on a screen in the communal space. However, while the avatar was wearing a strange hat intended to signal to passers-by that he was conducting a performance, they were not clearly informed about what was going on and should be considered unaware participants rather than users of the system (cf. Waern 2016). Group 5, who was working on a similar idea also conducted similar tests using other hackathon participants as avatars.

### ***Collaboration***

Two of the groups, 1 and 4, quickly established a hierarchical organisation with one person being appointed leader by the rest of the group. In the rest of the groups leadership roles were not explicitly assigned. As one could expect, we observed a variety of social dynamics in these groups: In some cases strong personalities appeared to be competing for domination in the group’s discussions, while in others there were no clearly dominating individuals. All of the groups had periods where one or more members of the group went away and worked apart from the rest of the group for longer periods of time. In some of the groups (2, 5, 6 and 7) this appeared to be a result of frustration and prolonged disagreements within the group.

The groups with clear leadership, 1 and 4, coordinated very differently. In group 1 the three members worked next to each other at the same table, often engaging in small conversations about the concept and the practicalities of their prototyping. The programmer clearly assumed a subordinate role,

offering his skills to the service of the director's vision. When we asked the programmer about this working arrangement he indicated that he was happy with it. He compared it to his experiences in an earlier game jam, where he had taken on the same role and had found it very rewarding:

“I was with another developer from school and we were in a team of eleven persons so it was really big, artists and game designers and us developers. And my friend told to the others, you can ask us, if you need anything, programming, we will make it. Just give us time and we will make it.” (David)

In contrast to this, the participants in group 4 quickly split up to work separately on different parts of the concept, and at times the two non-programmers were just waiting for the programmer (who was also the group leader) to re-emerge from where he was doing his coding. The non-programmers did not seem to be bothered that the programmer worked alone much of the time. They were confident that he did what the group had agreed upon. Maria, the game designer, likened it to composing music; something she thought couldn't be done in a group. When asked where the programmer was, she answered: “He has gone into his coding world. So, he is not here.” Noah, the programmer, confirmed Maria's view on what he was doing: “It just didn't help to have them. If they are looking at it while I am typing it doesn't really help.”

In several of the groups we observed problems with finding agreement between participants from different professions. This was particularly clear in groups 5 and 6, which both had film or TV professionals dominating the discussions, often prioritising conceptual work over making, in confrontations with the more technically oriented participants. In group 5 Rolf, the game designer and programmer, eventually started making a prototype on his own, loosely in line with the group's proposal, and relentlessly tried to get the others involved. However, they showed little interest in his sub-project, which consisted of making a 3D model of an hourglass to be used as a timer in the game. When Rolf tried to discuss the idea with the group on Sunday afternoon, the filmmakers Olivia and Sven had clearly given up on including Rolf's ideas in their project.

Sven: “You need one million grains of sand?”

Rolf: “Yeah and if we need that I just type in the number, one million, and there is one million.”

Sven: “And they pass in a certain amount of seconds?”

Rolf: “Yes.”

Sven: “Cool, yeah, do that, or a hand picking something out of a box, whatever... For me that is not important for the game.”

[...]

Rolf: “But as I said, for the program, what the question is, that is not relevant, because the questions can be anything.”

Sven: “If you hang on to that, work with that, then we can work with the questions.”

Olivia: “That’s what we are thinking, so I am happy to outsource this to you.”

Several groups had similar difficulties in finding a workable combination of conceptual ideas and practical programming. This challenge was even more pronounced in group 7, the only group which did not have any team member with programming skills. The group expressed frustration about this from the start of the hackathon, and in response the organiser brought in one of the helpers in the event, a computer engineer (Fred). The group tried to discuss their ideas with Fred in the hope that he could help implement them as a digital prototype of a game, but he quickly rejected the team's ideas as far too complex for the time and resources available. The group spent most of the hackathon in apparently frustrating discussions of this kind, without reaching any clear agreement on a specific idea to implement. Their final product was an idea for a board game with little detail about the game’s props and mechanics.

## **Challenges**

Our observations suggest that a primary challenge with the hackathon event is posed by the mismatch between the expectations of many of the participants and their ability to achieve concrete results. Many of the participants seemed to have a pre-understanding of the hackathon much in line with the common perception of an informal gathering focused on technological experimentation and collaborative creative

activities. How these expectations were negotiated varied a lot between the groups, and between the individual participants.

The participants in groups 1, 3 and 4 seemed to act the most in line with what can be observed in ordinary hackathons, relatively quickly converging on a concrete idea for a prototype and spending most of their time working with the practical and technical challenges involved in materialising their idea. Jill, the designer in group 3 explained her experience of the process as a struggle to negotiate between different work cultures:

“When you're in, let's say in university, there is always someone, a teacher or professor who wants you to go through some sort of ideating process. So you have to do a lot of Post-Its in the beginning, or whatever. There is always a culture of how you do it. But when you come into a room like this there is no culture, because everyone come from different places. And you have to, before, people have to figure out a way to do it.”

Participants in groups 2, 5, 6 and 7 expressed frustrations and indicated that the event differed from what they expected. On the one hand, many of the programmers seemed to feel isolated in their groups and clearly indicated some discomfort with the fact that the film and TV professionals dominated the event. On the other hand, several of the non-programmers also expressed frustration with the lack of programmers who could help implement ideas into “something digital”. When we asked Anna, the game designer in group 7, why the group wouldn't settle for making a non-digital prototype, she said: "I don't have time to do this just for fun. (...) I want it to be effective, I want to put this in my portfolio. (...) I have a million concepts in my head. I want them to be implemented, to be executed!"

There were some indications that the organizers of the hackathon had anticipated these problems and adapted the hackathon to accommodate for participants without skills in digital making and design. The organizers did emphasize from the start that any kind of prototyping could be undertaken, even stating that a dance would be a legitimate outcome. The choice of location in a well-stocked makerspace

with a wide range of materials for physical crafts was also done in order to encourage non-digital prototyping. Furthermore, the projects that formed the basis for the work in the hackathon were clearly rooted in the film and TV genres, offering familiar ground for those professionals.

However, it is clear that the participants experienced frustrations and conflicts between the cultures of hacking, film/TV production and design that did not get resolved. The first conflict can be framed as a mismatch between the participants' general lack of programming skills and their expectation that the hackathon should result in "something digital". Even though the organizer explicitly stated that this was not a required outcome of the event, all of the groups spent most of the event searching for ways to create digital prototypes – in fact, nearly all the groups spent considerable time trying to develop concepts for some sort of computer game. The second conflict seems to be related to the ideals for authorship embedded in the working cultures of film and TV professionals. Many of the film and TV professionals insisted on extended discussions focused on conceptual issues relating to the theme and message of their project, effectively battling for authorship and making it difficult to involve all participants on an equal footing in the group's creative output. It is likely that the task of hacking already existing film and TV concepts emphasized this dynamic.

### ***Conclusions and implications for future hackathons***

Many of the problems encountered by the participants in the NP hackathon seem to have come from the unclear definition of the task they were given. Since it was entirely open from the beginning what kind of material product was expected by the end of the event, many of the groups ended up spending much time and energy on overarching conceptual discussions, and only very late in the event started working on materialising their ideas. We suggest two possible strategies for meeting this challenge in future events of a similar kind.



If the purpose of the hackathon is to facilitate digital making for participants without skills in programming and design, we suggest giving them tools for end-user development such as those suggested by Fischer and Giaccardi (2006). These tools, combined with some deliberate constraints on the output from the hackathon, could enable the teams bypass some difficult negotiations and focus their creative work. However, it is important to note that some difficult negotiations may be important for cross-disciplinary learning and innovation, where articulating and resolving conflicts is central. Therefore it is important to find a careful balance between constraints and openness.

If the purpose of the hackathon is to facilitate collaboration and mutual learning, we similarly suggest the event should offer participants some methods, tools and techniques for equalising power relations and give rise to mutual learning, taking lessons from similar work in participatory design (Kensing and Greenbaum 2013, 33–34). This could be a strategy to accommodate Lodato and DiSalvo's (2015) critique that issue-oriented hackathons tend to build on a weak notion of participation. We suggest giving participants what Sanders and Stappers (2014) label generative toolkits, which “are used to follow a [...] deliberate and steered process of facilitation, participation [and] reflection”. The toolkit could be designed to address problems of working across disciplines directly, for instance by challenging role conceptions or help with creating common languages. However, such types of interventions should be used with caution in order to avoid getting in the way of the playful, free-for-all spirit associated with hackathons.

Furthermore, our observations from the NP hackathon suggest that basing the hackathon on far developed projects may be an impediment to innovation and unexpected outcomes. In particular, the decision to have the creative directors of the original projects participate in teams seems to have been an obstacle to experimentation, as those teams (unsurprisingly) were the ones that stuck closest to the original concept.

Finally it seems that the term hackathon, referencing a phenomenon coming from communities mostly involved in software production, brings with it strong ideals and expectation of digital making activities. To accommodate for this, we suggest that the label “hackathon” should be used carefully, and primarily for events that align with the ideals of hacker culture. Events outside the context of software production could search for other labels that signal activities more in line with the making cultures of their participants.

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